

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PALGE03932	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/KR2003/002045</b>	International filing date (day/month/year) <b>02 OCTOBER 2003 (02.10.2003)</b>	Priority date (day/month/year) 20 DECEMBER 2002 (20.12.2002)
International Patent Classification (IPC) or national classification and IPC  <b>IPC7 F25D 11/00</b>		
Applicant  <b>LG ELECTRONICS INC. et al</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of \_\_\_\_\_ sheets.

3. This report contains indications relating to the following items:
- I ☒ Basis of the report
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application

Date of submission of the demand  <b>29 JUNE 2004 (29.06.2004)</b>	Date of completion of this report  08 APRIL 2005 (08.04.2005)
Name and mailing address of the IPEA/KR Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea  Facsimile No. 82-42-472-7140	Authorized officer  KIM, Eun Rae  Telephone No. 82-42-481-5518



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR2003/002045

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☒ the international application as originally filed
- ☐ the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the claims:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement) under Article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the drawings:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets \_\_\_\_\_

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed." and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION

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## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1 - 11	YES
	Claims		NO
Inventive step (IS)	Claims	1 - 11	YES
	Claims		NO
Industrial applicability (IA)	Claims	1 - 11	YES
	Claims		NO

### 2. Citations and explanations (Rule 70.7)

Reference is made to the following documents:

D1: US 6,073,457 A  
D2: US 5,479,785 A  
D3: US 4,809,516 A  
D4: JP 09-113087 A  
D5: JP 2001-251888 A  
D6: JP 04-055676 A

#### 1. Novelty and Inventive Step

Claims 1-11 relate to an operation control apparatus for a compressor mainly comprising a stroke estimating unit, a control unit, and a current control means, and to an operation control method for a compressor, characterized by estimating the stroke of the compressor on the basis of the current and voltage applied to an interior motor of the compressor and of the motor constant of said motor, comparing the varying estimated stroke value and the preset stroke referent value, and properly controlling the current and voltage supplied to the motor of the compressor through the current control means.

D1 relates to an air conditioner in a motor vehicle containing a refrigerant circuit, which comprises an evaporator, an output-controlled compressor that is driven by an engine, a condenser, and an expansion device.

D2 relates to an electronic defrost controller with fan delay and drip time modes.

D3 relates to a residential HVAC system including a heat pump having a compressor arranged to heat a domestic hot water vessel and to heat or cool a storage vessel which is connected to a heat exchanger within the residence.

(Continued on Supplemental Sheet.)

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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## Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

### Continuation of:

Box V.

D4 relates to an operation controller of a refrigerator to reduce the thermal load of a compressor which is operated for a long time by a temperature detecting means, a fan for cooling the compressor, and a revolution number control means of the compressor.

D5 relates to a current-limiting circuit for an inverter-type refrigerator and its control method to improve the mobility of a compressor and protect a motor from overcurrent, where when overcurrent is generated, the power element is momentarily off and the current is prevented from being increased.

D6 relates to a method for controlling the operation of a water cooler, characterized by controlling a compressor according to the output of a temperature sensor installed in a water tank.

None of D1-D6 disclose the technical features and method for properly controlling the operation of a compressor characterized by estimating the stroke of the compressor on the basis of the current and voltage applied to an interior motor of the compressor and of the motor constant of said motor, comparing the varying estimated stroke value and the preset stroke referent value, and properly controlling the current and voltage supplied to the motor of the compressor through the current control means.

Therefore, the subject matter of claims 1-11 is considered to be novel under PCT Article 33(2). Since the combination of said cited documents does not deny the inventive step for the subject matter of claims 1-11, claims 1-11 also meet the requirement of PCT Article 33(3).

### 2. Industrial Applicability

Since claims 1-11 relate to an operation control apparatus for a compressor, the subject matter of claims 1-11 is considered to be industrially applicable under PCT Article 33(4).